Statement of

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before the

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Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the World Radiocommunication Conference (WRC) process and the critical importance of the successful negotiation for spectrum allocation at these international conferences.

The importance of reliable radiocommunication for NASA and its wide array of scientific missions cannot be overstated. We depend, every day, on sending and receiving critical information to our assets in space, including the International Space Station, our scientific satellites and, when we return to flight, the Space Shuttle. Lives depend on it. From our astronauts and cosmonauts living in space, to life all over our planet through the important research conducted using Earth-observing satellites, lives depend on reliable data relay provided through the radio frequency spectrum.

The only means of communication and control and of receiving data and transmitting data to aircraft and spacecraft is via radio. Because space knows no borders, NASA must work cooperatively with the other nations of the world in its use of the spectrum. Successful allocation of spectrum for our missions is absolutely dependent on the successful negotiations with the international community conducted at the WRC. NASA has an excellent track record of obtaining and protecting the necessary allocations for our scientific missions.

One example of this comes from our cooperation on space communication. Missions to deep space include exploration of the planets and have been responsible for many years for the production of spectacular photographic images of the planets. Such spacecraft, operating in the farthest regions of the solar system, require highly directional transmitting systems and highly sensitive receiving systems to deliver their data back to Earth. WRC 2003 made provision for new transmitting systems in allocating the frequency band 7145 - 7235 MHz to the space research service (SRS) (Earth-to-space) in the Table of Frequency Allocations. While the band has been available for use for some time, this action by WRC 2003 provides a clearer, more reliable allocation status, reduces

burdensome coordination costs, and makes the allocation easier to use for the space science community.

In the remote sensing arena, an urgent requirement was identified by the United Nations Conference on the Environment and Development (Brazil, 1992) for radar systems operating from space platforms to be able to sense the environment in a frequency band that could "see through" the canopy of rain forests around the world, to measure soil moisture, tropical forest biomass, and for documentation of geological history and climate change. Such a frequency band can only be found in the range from 300 to 600 MHz; WRC 2003 allocated the range from 432 – 438 MHz to the Earth exploration-satellite service (EESS) to conduct such observations. The band also will allow measurements of Antarctic ice thickness as well as the characterization of arid regions of the world from space. Complex protections had to be devised to prevent the space science radars that will use this frequency band from causing harmful interference to current users of the band, including U.S. military systems. Pre-coordination and notification of space science radar missions through the international members of the Spectrum Frequency Coordination Group (SFCG) was crucial to enabling the allocation to be made.

While NASA works closely with the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission (FCC) as a member of the U.S. delegation, we hold a rather unique role due to our strong partnership with space agencies around the world. This set of relationships helps the global scientific community to speak consistently in unison, benefiting NASA and our partners.

The sharing of frequency bands between commercial interests and public use or scientific interests, however, sometimes seems to be in conflict. On the one hand, the commercial entity needs to be assured of access to the appropriate spectrum to enable a viable business plan. On the other hand, public use and scientific operations cannot be evaluated in terms of revenue generation, but are needed to satisfy public use and scientific requirements, such as personal safety and property, weather forecasting, climate prediction, and environmental monitoring.

Close technical cooperation between commercial interests and the space science community took place during the period between WRC 2000 and WRC 2003 to balance the requirements of commerce and science. Possible methods that could be employed to facilitate the sharing of frequency bands between space science radio systems and other space and terrestrial radio systems, were identified.

Preparations for the next WRC begin shortly after the last one ends, even though that is three or four years away. In fact, we have already begun preparations for WRC 2007, which seems like a long lead, but will in actuality be necessary for the amount of work that will be required. This is due to the detailed coordination that is required to ensure a clear understanding of all positions -- internally at NASA, within the U.S. government and private sector, and with the international community through coordination at the International Telecommunication Union's (ITU) informal regional committees. NASA is

particularly focusing on the aeronautics telemetry and aviation safety issues, which are key agenda items for the upcoming WRC.

I serve as NASA's Spectrum Manager. Within the Space Flight Enterprise, the Space Communications team begins to assess the future spectrum requirements of the Agency based on current and planned programs. In turn, we submit our proposals to the U.S. delegation through the appropriate NTIA processes and begin discussions with our Federal government counterparts to seek a consensus. In parallel, the private sector develops proposals through the FCC WRC Advisory Committee and the Federal Government and non-Government proposals are then coordinated before approaching the international community on specific issues. Advocacy of US proposals and positions internationally requires the participation of our spectrum experts to pre-negotiate on issues that are of critical importance to NASA and its constituents.

NASA maintains an active role in the ITU to aid in accomplishing our objectives, as a member of the U.S. delegation. To obtain the spectrum required, NASA must be a major participant in WRC activities by developing, submitting, and defending proposals to the conferences for those frequency bands, operational requirements, and technical parameters needed by NASA missions. This applies to both current missions and those projected into the future. The vision for space exploration announced by the President on January 14, 2004, further underscores the importance of NASA's full participation in all of the ITU associated work.

The space science requirement, and the technical foundations upon which the new allocations achieved at WRC-2003 were based, were established in the technical groups of the ITU since WRC-2000. The space agencies of the world also worked to refine the technical and operational requirements within the SFCG.

As we begin preparing for the WRC 2007 and close the books on our accomplishments at WRC 2003, we look for lessons learned to aid us in the months ahead. The growing importance of regional conferences in Asia, Europe and the Americas promises to be a critical path to favorable conclusions, and NASA looks to be a full participant in these activities. Our successes stem, I believe, from laying the foundation of the technical aspects of each issue very early in the process, and then reaching out proactively to key partners to build support and develop mutually acceptable resolutions. We then rely on the strong negotiating skills of the U.S. Ambassador and the delegation team during the WRC negotiations.

As a Presidential appointee, the Ambassador and head of the U.S. delegation, enjoys the confidence of the Administration. This person, NASA recommends, should have the political expertise and negotiating skills that will prove beneficial in this critical role. NASA is deeply indebted to the expertise and talents of WRC 2003 Ambassador Janice Obuchowski for her skillful negotiations on our behalf. In addition, NASA was pleased to offer our suggestions for improvements to the WRC process in response to the NTIA Request for Comment.

Ongoing, fruitful cooperation and partnership with other U.S. Federal Government agencies, industry, and the global communications community is crucial for allocating and maintaining the critical radiofrequency spectrum necessary for accomplishing NASA's scientific mission as the Nation's civilian space agency.

Thank you for the opportunity to address the Subcommittee on this important subject. I look forward to answering any questions you may have.